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Date 03/01/02 Serial # 09/328,646 Priority Application Date 06/09/99
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 Secondary Refs ☒ Foreign Patents ☒ _____
 Teaching Refs ☒ _____

08-02-02 P03:11 OUT

What is the topic, such as the novelty, motivation, utility, or other specific facets defining the desired focus of this search? Please include the concepts, synonyms, keywords, acronyms, registry numbers, definitions, structures, strategies, and anything else that helps to describe the topic. Please attach a copy of the abstract and pertinent claims.

hydrogensilsesquioxanes having the formula $(\text{HSiO}_{1.5})_n$

hydrogensiloxanes having the formula $[(\text{HSiO}_{1.5})_x \text{O}_y]_n$

wherein x = about 6 to about 20

y = 1 to about 3

n = 1 to about 4,000.

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 Other _____

08/06/2002

Serial No.:09/328,646

FILE 'REGISTRY' ENTERED AT 10:15:34 ON 06 AUG 2002

E O1.5 H SI/MF
E H O1.5 SI/MF
E H O SI/MF
E H O SI/ELF
E H O1.5 SI/ELF
E H O1.5 SI/MF

L1 0 S H O1.5 SI

FILE 'HCAPLUS' ENTERED AT 10:17:37 ON 06 AUG 2002

L2 38 S HSIO1.5
L3 5630 S SILSESQUIOXANE
L4 10 S HYDROGENSILSESQUIOXANE
L5 10 S L4 NOT L2
L6 1590 S L3 AND (INSULAT? OR DIELECTRIC? OR OXIDE)
L7 470 S L6 AND SEMICONDUCTOR
L8 142 S L7 AND (INTERCONNECT? OR CONNECT?)
L9 139 S L7 AND (INTERCONNECT?)
L10 65621 S SILOXANES
L11 83489 S SILOXANE
L12 272 S HYDROSILOXANE
L13 37 S L12 AND (INSULAT? OR DIELECTRIC? OR OXIDE)
L14 37 S L13 NOT (L4 OR L2)
L15 2 S L12 AND (INSULAT? OR DIELECTRIC? OR OXIDE) (3N) (FILM OR LAYER?)
L16 123 S HYDROGENSILOXANE
L17 2 S L16 AND (INSULAT? OR DIELECTRIC? OR OXIDE) (3N) (FILM OR LAYER?)

L15 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:466575 HCAPLUS

DN 125:88927

TI Semiconductive silicone rubber compositions with reduced variation of volume resistivity

IN Ushio, Yoshito; Nakamura, Akito

PA Dow Corning Toray Silicone, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08120176	A2	19960514	JP 1994-281194	19941020
AB	<p>The compns. comprise (A) 100 parts diorganopolysiloxanes having .gtoreq.2 Si-bonded alkenyl groups, (B) 2-30 parts carbon black, (C) 2-20 parts metal compd. elec. conductive whiskers, and (D) sufficient amt. of curing agents. Me3SiO-terminated di-Me siloxane-Me vinyl siloxane copolymer (di-Me siloxane-Me vinyl siloxane mol ratio 99.84:0.16) 100, fumed SiO2 30, OH-terminated di-Me siloxane 5, Ketjenblack EC 4, and Dentall WK 200 (Sn oxide- and Sb oxide-coated K titanate whisker) 10 parts were compounded to give a silicone rubber base, 100 parts of which were mixed with 1 part 2,5-dimethylbis(2,5-tert-butylperoxy)hexane, pressed at 170.degree. for 10 min, and heated at 200.degree. for 4 h to give 10 sheets showing av. vol. resistivity 4.2 .times. 105 .OMEGA.-cm and std. deviation of common logarithm of vol. resistivity 0.12.</p>				

L15 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2002 ACS

AN 1981:210373 HCAPLUS

DN 94:210373

TI Organosilicon insulating compound hardened by a polyaddition reaction

AU Nanysh'yan, S. R.; Severnyi, V. V.; Polees, A. B.; Ushanov, S. M.

CS USSR

SO Plast. Massy (1981), (3), 32

CODEN: PLMSAI; ISSN: 0554-2901

DT Journal

LA Russian

AB The title compd. (Kompson 159-167) contg. a low-mol.-wt. org. polysiloxane I (m = 2-3, n .apprxeq. 103), prepd. from .alpha.,w-dihydroxy(polydimethylsiloxane) and an appropriate vinyl-contg. organosilicon oligomer, and a crosslinking agent [(Me3SiO0.6)0.1(Me2SiO)0.5(MeHSiO)0.4]n (n = 10-12), prepd. by cohydrolysis of the appropriate organochlorosilanes, gave, in the presence of the Speier catalyst (1% H2PtCl6 in iso-PROH) after 50 min curing at 50.degree. proceeding by a polyaddn. mechanism, an **insulating coating** useful in the semiconductor industry and having tensile strength 3.5 MPa, bulk resistivity (1-5) .times. 1014 .OMEGA.cm, dielec. loss tangent 0.001 (1 MHz), and dielec. strength 25 kV/mm, along with acceptable relaxation and elastic properties.

L5 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 2002:327850 HCAPLUS

DN 136:349352

TI Method for determining side wall oxidation of low-k materials in vias and trenches

IN Dunne, Jude A.

PA Honeywell International Inc., USA

SO U.S., 9 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 6379870	B1	20020430	US 2000-614633	20000712
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AB The invention provides a process for monitoring the quality of via or trench formation in the prodn. of a semiconductor device. More particularly, the invention pertains to a process for detecting side wall oxidn. of low dielec. const. materials during the formation of vias or trenches in dielecs. At least 1 via and/or trench is cleaved and contacted with a solvent to remove partially oxidized portions of dielecs. on the side walls, enabling defects to be visually inspected.

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 2002:241221 HCAPLUS

DN 136:271732

TI Method for fabricating semiconductor device capable of reducing parasitic capacitance and semiconductor device thereby

IN Kim, Jae-hak; Sin, Hong-jae; Han, Jae-hyun

PA S. Korea

SO U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 2002036352	A1	20020328	US 2001-919340	20010730
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PRAI	KR 2000-43961	A	20000729		
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AB A semiconductor device capable of reducing parasitic capacitance and a method thereof are disclosed, the method including the steps of depositing sequentially an inorg. Si oxide layer and a low dielec. const. org. Si oxide layer on a substrate, forming a partial trench with a predetd. depth in the org. Si oxide layer by patterning, oxygenating an inner wall of the partial trench, and forming a trench by etching the partial trench with HF.

L5 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 2002:49710 HCAPLUS

DN 136:301239

TI Experimental analysis of high-resolution soft x-ray microscopy

AU Chao, Weilun; Anderson, Erik H.; Denbeaux, Gregory; Harteneck, Bruce D.; Pearson, Angelic L.; Olynick, Deirdre L.; Schneider, Gerd; Attwood, David T., Jr.

CS Center for X-ray Optics, Lawrence Berkeley National Laboratory, CA, 94720,

USA

SO Proceedings of SPIE-The International Society for Optical Engineering
(2001), 4499(X-Ray Micro- and Nano-Focusing: Applications and Techniques
II), 134-141

CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

AB The soft x-ray, full-field microscope XM-1 at Lawrence Berkeley National Lab.'s (LBNL) Advanced Light Source has already demonstrated its capability to resolve 25-nm features. This was accomplished using a micro zone plate (MZP) with an outer zone width of 25 nm. Limited by the aspect ratio of the resist used in the fabrication, the gold-plating thickness of that zone plate is around 40 nm. However, some applications, in particular, biol. imaging, prefer improved efficiency, which can be achieved by high-aspect-ratio zone plates. This was accomplished by using a bilayer-resist process in the zone plate fabrication. As the first attempt, a 40-nm-outer-zone-width MZP with a nickel-plating thickness of 150 nm (aspect ratio of 4:1) was successfully fabricated. Relative to the 25-nm MZP, this zone plate is ten times more efficient. Using this high-efficiency MZP, a line test pattern with half period of 30 nm is resolved by the microscope at photon energy of 500 eV. Furthermore, with a new multilayer mirror, the XM-1 can now perform imaging up to 1.8 keV. An image of a line test pattern with half period of 40 nm has a measured modulation of 90%. The image was taken at 1.77 keV with the high-efficiency MZP with an outer zone width of 35 nm and a nickel-plating thickness of 180 nm (aspect ratio of 5:1). XM-1 provides a gateway to high-resoln. imaging at high energy. The normalized frequency response, which is the ratio of the power d. of the soft x-ray image to that of the SEM image, is shown in this paper.

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:911596 HCAPLUS

DN 136:254472

TI Substrate cooling efficiency during cryogenic inductively coupled plasma polymer etching for diffractive optics on membranes

AU Olynick, Deirdre L.; Anderson, Erik H.; Harteneck, Bruce; Veklerov, Eugene

CS Lawrence Berkeley National Laboratory, Berkeley, CA, 94530, USA

SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (2001), 19(6), 2896-2900

CODEN: JVTBD9; ISSN: 0734-211X

PB American Institute of Physics

DT Journal

LA English

AB High-resoln. diffractive optics on membranes have been fabricated using a bilayer resist system consisting of **hydrogensilsesquioxane** as a neg. electron-beam imaging layer and hardbaked AZPN114 as the underlay. To minimize sidewall etching of the polymer, the AZPN114 layer was etched at -100.degree.C in a cryogenically cooled inductively coupled plasma etcher. Features fabricated on Si supported membrane wafers, where the areas of interest are sepd. from the platen by the wafer thickness, provide an addnl. challenge to the low-temp. dry etch process due to low cooling efficiency (and thus membrane heating). Using cooling theory and exptl. verification we look at membrane cooling efficiency for different hardware and membrane size combinations. Diffusive cooling in membranes less than 140 .mu.m wide dominates membrane cooling during the etch process. With these small membranes we have fabricated high efficiency

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x-ray zone plates with linewidths as small as 30 nm and 6:1 aspect ratios.

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:888112 HCAPLUS

DN 136:355763

TI Characterization of poly(silsesquioxane) by thermal curing

AU Yang, Chang-Chung; Chen, Wen-Chang; Chen, Li-Mei; Wang, Chao-Jen

CS Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan

SO Proceedings of the National Science Council, Republic of China, Part A: Physical Science and Engineering (2001), 25(6), 339-343
CODEN: PNAEE2; ISSN: 0255-6588

PB National Science Council

DT Journal

LA English

AB The structures and properties of three poly(silsesquioxane) (POSS) films were studied, including hydrogen silsesquioxane (HSQ), Me silsesquioxane (MSQ), and hybrido-organo siloxane polymer (HOSP). The cage structures of the POSS films were transformed into network structures by means of thermal curing. The order of the ratios of network/cage transformation after thermal curing was HSQ > MSQ > HOSP. This was the same as the order of the refractive indexes of the studied POSS films because of the variation of the molar volume due to the network/cage ratio. The structural conversion of the MSQ film was studied at four different temps. of 200, 250, 300, and 350.degree.C under a time range of 0 to 60 min. The exptl. results show that the structural conversion could be explained based on two-stage zero order kinetics. The rate const. for the first stage was one or two orders of magnitude greater than that for the second stage. The activation energy and frequency factor of network/cage transformation were 0.38 eV and 1.21 .times. 10² s⁻¹ for the first stage while those for the second stage were 0.14 eV and 8.8 .times. 10⁻³ s⁻¹, resp. The smaller frequency factor of the second stage compared to that of the first stage probably occurred because the network structure of the second stage limited the structural transformation. These results suggest that the structure and properties of the POSS film depend strongly on the conditions of thermal curing.

RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:596161 HCAPLUS

DN 129:224543

TI Formation of organic solvent-insoluble **hydrogensilsesquioxane** coating on semiconductor substrate

IN Bremmer, Jeffrey Nicholas; Liu, Youfan

PA Dow Corning Corp., USA

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10242137	A2	19980911	JP 1998-25938	19980206
	TW 419719	B	20010121	TW 1998-87101518	19980205
PRAI	US 1997-798405	A	19970207		

AB The insol. coating is formed on a semiconductor substrate by (a) applying

a compn. contg. org. solvent-sol. **hydrogensilsesquioxanes** and
 (b) heating at .ltoreq.375.degree. for enough time so that the coating is
 converted to an insol. coating whose content of H is more than .gtoreq.80%
 of the content of SiH in the precursors. The coating is for making smooth
 surface on the substrate and the stress in the coating is lowered without
 affecting of other characteristics, e.g., dielec. const., etc.

L5 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:253587 HCAPLUS

DN 126:245619

TI Formation of multilayer circuit by using silsesquioxane as interlayer
 electric insulator precursor

IN Yamaha, Takahisa; Inoe, Jushi

PA Yamaha Corp, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09036117	A2	19970207	JP 1995-201591	19950714
	JP 3149739	B2	20010326		
	US 5821162	A	19981013	US 1996-679738	19960712
PRAI	JP 1995-201591	A	19950714		

AB The circuit is manufd. by a process including following successive steps;
 (1) covering the 1st elec. insulator film on a substrate by the 1st
 circuit layer, (2) forming a planarizing **hydrogensilsesquioxane**
 film on the 1st circuit layer, (3) converting the silsesquioxane to a
 preceramic Si oxide film by heating in an inert gas, (4) covering the
 preceramic by the 2nd insulating layer so that not to reflect fine bumps,
 which are expected to be formed in following step, (5) converting the
 preceramic to ceramic by heating in an oxidn. atm., and (6) forming the
 2nd circuit directly or through the 3rd elec. insulator film on the
 ceramic SiO2 layer.

L5 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:253586 HCAPLUS

DN 126:245618

TI Formation of multilayer circuit by using silsesquioxane as interlayer
 electric insulator precursor

IN Inoe, Jushi; Yamaha, Takahisa

PA Yamaha Corp, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09036116	A2	19970207	JP 1995-201590	19950714
	JP 3070450	B2	20000731		
	US 5750403	A	19980512	US 1996-678568	19960712
PRAI	JP 1995-201590	A	19950714		

AB The circuit is manufd. by a process including following successive steps;
 (1) covering the 1st elec. insulator film on a substrate by the 1st
 circuit layer, (2) forming a planarizing **hydrogensilsesquioxane**
 film on the 1st circuit layer, (3) converting the silsesquioxane to a
 preceramic Si oxide film by heating in an inert gas, (4) covering the

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preceramic by the 2nd insulating layer, (5) converting the preceramic to ceramic by heating in an oxidn. atm., in which the 2nd insulator film prevents the preceramic from generating fine bumps, and (6) forming the 2nd circuit directly on the ceramic SiO₂ layer.

L5 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 1992:472640 HCAPLUS

DN 117:72640

TI Use of metal salts in manufacture of oligomeric
hydrogensilsesquioxanes by hydrolysis/condensation reactions

IN Agaskar, Pradyot

PA USA

SO U.S., 6 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5106604	A	19920421	US 1991-668032	19910312
	WO 9216458	A1	19921001	WO 1992-US2104	19920312
	W: AU, BB, BR, CA, FI, HU, JP, KP, KR, LK, MG, MW, NO, RO, RU, SD				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LU, MC, NL, SE				
	AU 9216789	A1	19921021	AU 1992-16789	19920312
	US 5593727	A	19970114	US 1993-148391	19931108
PRAI	US 1991-668032		19910312		
	WO 1992-US2104		19920312		
	US 1992-871389		19920421		

AB The process comprises prepg. a reaction medium having a 1st solvent phase and a 2nd solvent phase consisting of a concd. metal salt (e.g., FeCl₃) soln. in a polar org. solvent and water, adding HSiX₃ (X is a solvent-hydrolyzable group) to the 2-phase reaction medium, sepg. the 1st solvent phase from the 2nd solvent, treating the sepd. 1st solvent with a metal salt contg. CO₃2- to remove byproducts, isolating a mixt. of crystals of (HSiO₃/2)₈ and (HSiO₃/2)₁₀ by slow evapn. of the 1st solvent, and washing the mixt. with a hydrocarbon solvent to isolate crystals of (HSiO₃/2)₈.

L5 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2002 ACS

AN 1970:405563 HCAPLUS

DN 73:5563

TI **Hydrogensilsesquioxanes**

IN Collins, Warde Thomas; Frye, Cecil L.

PA Dow Corning Corp.

SO Ger. Offen., 14 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 1955511	B2	19730201	DE 1969-1955511	19691104
	DE 1955511	C3	19730830		
	US 3615272	A	19711026	US 1968-773314	19681104
	GB 1245483	A	19710908	GB 1969-1245483	19691006
	FR 2022525	A5	19700731	FR 1969-37744	19691103
PRAI	US 1968-773314		19681104		

AB Mixts. of the title compds. (HSiO₃/2)_n (I) were prepd. from HSiCl₃ or HSi(OMe)₃. Thus, 12.7 g HSiCl₃ in 150 ml C₆H₆ was added to 200 g C₆H₆,

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80.3 g concd. H_2SO_4 and 60.4 g fuming sulfuric acid (15% SO_3) within 6 hr, the acid phase removed, and the C_6H_6 phase washed to neutrality with 50% H_2SO_4 and finally with H_2O . The soln. was filtered and C_6H_6 evapd. to give 97.8% resinlike I contg. 9-27% volatile I (n = 10) 4.2, I (n = 12) 43.2 I (n = 14) 36.8, and I (n = 16) 13.5 wt. %.

L2 ANSWER 1 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 2002:231223 HCAPLUS

DN 136:333639

TI Structural, electrical, and mechanical properties development during curing of low-k hydrogen silsesquioxane films

AU Toivola, Yvete; Thurn, Jeremy; Cook, Robert F.

CS Department of Chemical Engineering and Materials Science, University of Minnesota, Minneapolis, MN, 55455, USA

SO Journal of the Electrochemical Society (2002), 149(3), F9-F17

CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society

DT Journal

LA English

AB Changes in structure and properties of a com. low dielec. const. (low-k) silsesquioxane (SSQ) material are examd. as a function of curing temp. (375-450.degree.C). Curing results in a chem. reaction in which cage-like (HSiO1.5) SSQ oligomers network via -O-Si-O- linkages.

A direct consequence of the chem. and structural evolution is a change in elec. and mech. properties. A correlation is made between chem. and structural changes on curing (quantified by IR spectroscopy) and the resulting dielec. const., film stress, hardness, and modulus. In particular, IR spectroscopy was used to quantify the increased -O-Si-O- oligomer network formed as a result of increased curing temp. Film modulus and hardness, detd. by depth-sensing indentation, were shown to increase as a result of increased networking. Residual film stress, detd. by a curvature measurement technique, was detd. to be tensile with increased magnitude on increased network formation. Film dielec. const. detd. by capacitance measurements of metal dot structures increased as a result of increased network formation. Capping SSQ films with thin layers of SiNx was shown to greatly improve resistance to stress-corrosion cracking for all levels of network formation.

RE.CNT 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L2 ANSWER 2 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:641431 HCAPLUS

TI Synthesis of mixed layers derived from functional silicon oxide clusters on gold

AU Nicholson, Kenneth T.; Zhang, K. Z.; Banaszak Holl, Mark M.; McFeely, F. R.; Pernisz, Udo C.

CS Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109, USA

SO Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, United States, August 26-30, 2001 (2001), PHYS-334 Publisher: American Chemical Society, Washington, D. C.

CODEN: 69BUZP

DT Conference; Meeting Abstract

LA English

AB The synthesis of single and multiphase mixed layers of silicon oxide clusters (HSiO1.5)n on freshly evapd. gold surfaces is reported within this paper. The dynamic nature of an assembled H8Si8O12 cluster layer in the presence of other adsorbates in ultra-high vacuum is the major player in the displacement and exchange reactions which yield mixed layers contg. organosilicon entities with several potential functionalities. The role of at. hydrogen, a byproduct of the cluster chemisorption, in the formation of these novel mixed layers will also be discussed.

L2 ANSWER 3 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:640133 HCAPLUS
TI Scanning tunneling microscopy and spectroscopy study of a model Si/SiO₂ interface: Spherosiloxane clusters on Si(100)
AU Schneider, Kevin S.; Orr, Brad G.; Banaszak Holl, Mark M.
CS Department of Chemistry, University of Michigan, Ann Arbor, MI, 48109-1055, USA
SO Abstracts of Papers, 222nd ACS National Meeting, Chicago, IL, United States, August 26-30, 2001 (2001), MTL5-001 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69BUZP
DT Conference; Meeting Abstract
LA English
AB Scanning tunneling microscopy (STM) and spectroscopy data for a model Si/SiO₂ interface system comprised of spherosiloxane clusters ([H₈SiO_{1.5}]_n) chemisorbed to Si(100) will be presented. Information obtained from these expts. may yield a better understanding of the chem., phys., and elec. phenomena occurring in device Si/SiO₂ interfaces. Previous studies have produced two bonding models for the H₈SiO₁₂/Si(100) model oxide interfacial system: the "monovortex" and "cracked cluster" bonding configurations. Non-local d. functional theory (NL-DFT) was used to derive electron d./electrostatic potential maps for the H₈-SiO₁₂ monovortex and cracked cluster bonding configurations (Fig. 1A&B). STM data of the H₈SiO₁₂/Si(100) surface (Fig. 1C) is entirely consistent with the geometrical constraints imposed from NL-DFT calcs. for the monovortex attachment model. Similar expts. for the H₁₀SiO₁₅/Si(100) system will also be presented. An expected STM filled state image of a monovortex-attached H₁₀SiO₁₅ cluster to Si(100) is shown in Fig. 2.

L2 ANSWER 4 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:401495 HCAPLUS

DN 133:44331

TI Preparation of hydrogen silsesquioxane resins and modified hydrogen silsesquioxane resins in high yield without using strong acids

IN Carpenter, Leslie Earl, II; Suto, Michitaka; Zank, Gregg Alan

PA Dow Corning Asia, Ltd., Japan

SO Eur. Pat. Appl., 7 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1008609	A2	20000614	EP 1999-124291	19991206
	EP 1008609	A3	20010314		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000169585	A2	20000620	JP 1998-347354	19981207
	KR 2000047964	A	20000725	KR 1999-55440	19991207
PRAI	JP 1998-347354	A	19981207		
AB	Hydrogen silsesquioxane with sol. in solvents without gelling, is prepd. by hydrolysis and condensation of trichlorosilane (HSiCl ₃) in a two-phase system comprising water and .gtoreq.1 oxygen-contg. org. solvent selected from ketones, ethers, and esters. The silanol resin obtained is capped with R ₃ SiO _{0.5} (R = Me, vinyl, H; e.g., Me ₃ SiCl), to form a modified hydrogen silsesquioxane resin (H ₈ SiO _{1.5}) _x (R ₃ SiO _{0.5}) _{1-x} with chem. stability.				

L2 ANSWER 5 OF 38 HCAPLUS COPYRIGHT 2002 ACS

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Serial No.:09/328,646

AN 1998:709120 HCAPLUS
 DN 129:331201
 TI Stable solutions of siloxane polymers for coating semiconductor materials
 IN Leung, Roger Y.; Nakano, Tadashi
 PA AlliedSignal Inc., USA
 SO PCT Int. Appl., 36 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9847943	A1	19981029	WO 1998-US6165	19980330
	W: CA, CN, IL, JP, KR, RU, SG				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	US 6015457	A	20000118	US 1998-39289	19980312
	TW 419493	B	20010121	TW 1998-87105463	19980410
PRAI	US 1997-44478P	P	19970421		
	US 1998-39289	A	19980312		
AB	Poly(hydrido siloxane) copolymers and solns. of these copolymers are prepd. for coating semiconductor substrates as planarizing dielec. layers. The copolymers (HSiO _{1.5}) _a (HSiO(OR)) _b (SiO ₂) _c , where R = a mixt. of H and C1-4-alkyl; a + b + c = 1 ; 0.5 < a < 0.99; 0.01 < b < 0.5; and 0 < c < 0.5 are prepd. from alkoxysilanes. Thus, hydrolytic polymn. of triethoxysilane in Me ₂ CO/HNO ₃ /H ₂ O gave a copolymer of mol. wt. 20,000. Thus, copolymer was mixed/heated with 2,2-dimethoxypropane and Bu ₂ O to remove H ₂ O and alc. and the stable (>9 mo. at -15.degree.) soln. was spin coated onto silicon wafers.				

L2 ANSWER 6 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:505736 HCAPLUS
 DN 129:217206
 TI Highly Porous Polyhedral Silsesquioxane Polymers. Synthesis and Characterization
 AU Zhang, Chunxin; Babonneau, Florence; Bonhomme, Christian; Laine, Richard M.; Soles, Christopher L.; Hristov, Hristo A.; Yee, Albert F.
 CS Departments of Chemistry Materials Science and Engineering and the Macromolecular Science and Engineering Center, University of Michigan, Ann Arbor, MI, 48109, USA
 SO Journal of the American Chemical Society (1998), 120(33), 8380-8391
 CODEN: JACSAT; ISSN: 0002-7863
 PB American Chemical Society
 DT Journal
 LA English
 AB Polyhedral octahydridosilsesquioxanes, [HSiO_{1.5}]₈ (1) and [(HSiMe₂O)SiO_{1.5}]₈ (3) were hydrosilylatively copolymd. with stoichiometric amts. of the octavinylsilsesquioxanes, [vinylSiO_{1.5}]₈ (2) and [(vinylSiMe₂O)SiO_{1.5}]₈ (4) in toluene using platinum divinyltetramethyldisiloxane, "Pt(dvs)", as catalyst. The degree of condensation of the resultant four copolymers ranges from 43% to 81% depending on intercube chain lengths, as detd. by solid state ¹³C and ²⁹Si MAS NMR analyses, using cross-polarization (CP) techniques. The presence of residual functional groups was confirmed by diffuse reflectance IR Fourier transform spectroscopy (DRIFTS). Polymer porosities were measured using nitrogen sorption, positron annihilation lifetime spectroscopy (PALS), and small angle X-ray scattering (SAXS) methods. The combination of these three techniques allows a relatively complete description of the pore sizes and pore size distributions in these materials. The pores in the cube interiors are .apprx.0.3 nm in diam., while those between the

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cubes range from 1 to 50 nm in diam. (for polymer 3 + 4). Nitrogen sorption analyses give sp. surface areas (SSAs) of 380 to 530 m²/g with "observable" pore vols. of 0.19-0.25 mL/g.

L2 ANSWER 7 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:442283 HCAPLUS
DN 129:169762
TI In situ high-pressure- and high-temperature studies of silicon suboxides via energy-dispersive x-ray diffraction
AU Friede, B.; Jansen, M.
CS Institut Anorganische Chemie, Universitaet Bonn, Bonn, D-53121, Germany
SO Zeitschrift fuer Anorganische und Allgemeine Chemie (1998), 624(7), 1159-1165
CODEN: ZAACAB; ISSN: 0044-2313
PB Johann Ambrosius Barth
DT Journal
LA German
AB The amorphous Si compds. Si₂O₃, H₂Si₂O₄, HSiO_{1.5}, and SiO were investigated under high-pressure- and high-temp. conditions in situ via energy-dispersive x-ray diffraction with synchrotron radiation. Except for SiO, at a pre-set pressure of 45 kbars the formation of coesite was obsd. at heating. Com. available SiO did not crystallize in any way, indicating that it seems not to consist of Si(II) oxide, but is in fact a mixt. of Si and SiO₂, disproportionated on an at. scale.

L2 ANSWER 8 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:293555 HCAPLUS
DN 129:17111
TI Stable solutions of silsesquioxane or siloxane resins and silicone solvents
IN Hacker, Nigel P.; Krajewski, Todd; Lefferts, Scott; Davis, Gary
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9818850	A1	19980507	WO 1997-US19299	19971027
	W: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, GH, HU, ID, IL, IS, JP, KP, KR, LK, LR, LS, LT, LV, MG, MK, MN, MW, MX, NZ, PL, RO, RU, SD, SG, SI, SK, SL, TR, TT, UA, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	US 6020410	A	20000201	US 1997-955802	19971022
	AU 9850872	A1	19980522	AU 1998-50872	19971027
	EP 935632	A1	19990818	EP 1997-913759	19971027
	EP 935632	B1	20011212		
	R: DE, FR, GB, IE				
	JP 2002514238	T2	20020514	JP 1998-520630	19971027
	TW 428016	B	20010401	TW 1997-86116080	19971029
	KR 2000052937	A	20000825	KR 1999-703809	19990429
PRAI	US 1996-29235P	P	19961029		
	US 1997-955802	A	19971022		
	WO 1997-US19299	W	19971027		
AB	Storage-stable solns. of silsesquioxanes or siloxanes, for coatings of,				

e.g., semiconductors, are obtained by means of a silicon-contg. solvent compn. The soln. has .gtoreq.1 polymer having a formula $[(HSiO_{1.5})_xOy]_n$, $(HSiO_{1.5})_n$, $[(HSiO_{1.5})_xOy(RSiO_{1.5})_z]_n$, $[(HSiO_{1.5})_x(RSiO_{1.5})_y]_n$ or $[(HSiO_{1.5})_xOy(RSiO_{1.5})_z]_n$ wherein $x = 6-20$, $y = 1-3$, $z = 6-20$, $n = 1-4,000$, and each R is independently H, C1-8 alkyl or C6-12 aryl. The solvent has the formula $(CH_3)_3SiO[Si(CH_3)_2]_a-Si(CH_3)_3$, $(CH_3CH_2)SiO[Si(CH_3CH_2)_2]_a-Si(CH_3CH_2)_3$, $R_3SiO[SiR'_2]_a-SiR'_3$, $[OSi(CH_3)_2]_b$, $[OSi(CH_3CH_2)_2]_b$ or $[OSiR'_2]_n$ wherein $a = 0-5$, $b = 3-5$, and each R' is independently H or C1-8 alkyl.

L2 ANSWER 9 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1998:288782 HCAPLUS
 DN 129:86705
 TI Thin-film materials and minimum thermal conductivity
 AU Lee, S. -M.; Matamis, George; Cahill, David G.
 CS Department of Materials Science and Engineering, University of Illinois, Urbana, IL, 61801, USA
 SO Microscale Thermophysical Engineering (1998), 2(1), 31-36
 CODEN: MTENFP; ISSN: 1089-3954
 PB Taylor & Francis
 DT Journal
 LA English
 AB The theor. min. thermal cond. can be used to model heat transport in a wide variety of bulk and thin-film materials with strong at.-scale disorder. To explore the possibility of using metastable microstructures in thin-film materials to achieve significant redns. in cond., the authors present exptl. results-obtained using the 3.omega. method in the temp. range 77-400 K-on two novel systems. (1) The thermal cond. of a low-dielec.-const. "flowable oxide" ($HSiO_{1.5}$, hydrogen silsesquioxane) is greatly reduced relative to SiO_2 . (2) The thermal cond. of stabilized zirconia/ SiO_2 multilayers is unchanged by solid-solid interfaces sep'd. by nanometer length scales.

L2 ANSWER 10 OF 38 HCAPLUS COPYRIGHT 2002 ACS
 AN 1996:522988 HCAPLUS
 DN 125:247889
 TI The monophenylhydrosilasesquioxanes $PhH_n-1Si_nO_{1.5n}$ where $n = 8$ or 10
 AU Calzaferri, Gion; Marcolli, Claudia; Imhof, Roman; Toernroos, Karl W.
 CS Inst. of Inorganic and Physical Chemistry, Univ. of Berne, Bern, 3000, Switz.
 SO Journal of the Chemical Society, Dalton Transactions: Inorganic Chemistry (1996), (15), 3313-3322
 CODEN: JCDTBI; ISSN: 0300-9246
 PB Royal Society of Chemistry
 DT Journal
 LA English
 AB The 1st monosubstituted decasilasesquioxane, $PhH_9Si_{10}O_{15}$, and the analogous $PhH_7Si_8O_{12}$ mol. were prepd. and characterized by IR and Raman spectroscopy and x-ray crystallog. Both have crystallog. C1 symmetry, but their cages exhibit an approx. C_s , and an effective C_3 , symmetry, resp. in the cryst. state. The IR and Raman spectra of the two mols. are very similar and reflect the close similarity obsd. for the spectra of $H_8Si_8O_{12}$ and $H_{10}Si_{10}O_{15}$. They were treated as a superposition of the spectra of the siloxane cage $H_n-1Si_nO_{1.5n}$, $n = 8$ or 10 , the Ph substituent and the connecting moiety $O_3Si-C(CH_3)_2$ and assigned from spectral correlation and normal coordinate anal. The siloxane cage vibrations are best understood by correlation with those of the unsubstituted cages, indicating that distortions of the Si_8O_{12} and $Si_{10}O_{15}$ cages caused by the substituent are

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small. A comparison of the Si-C stretching force consts. indicates that Si-Cvinyl and Si-Cphenyl are of similar strength while the Si-Calkyl bond is weaker. The notion of ring-opening vibrations, introduced for (HSiO_{1.5})_{2n}, n = 2, 3, 4, etc., is also applicable to PhH₇Si₈O₁₂ and PhH₉Si₁₀O₁₅. The Ph substituent does not influence the frequency range of four- and five-membered ring-opening vibrations, however the no. of such vibrations is increased.

L2 ANSWER 11 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:452231 HCAPLUS

DN 125:144052

TI Silsesquioxanes as Synthetic Platforms. 3. Photocurable, Liquid Epoxides as Inorganic/Organic Hybrid Precursors

AU Sellinger, Alan; Laine, Richard M.

CS Department of Materials Science and Engineering Chemistry, University of Michigan, Ann Arbor, MI, 48109-2136, USA

SO Chemistry of Materials (1996), 8(8), 1592-1593

CODEN: CMATEX; ISSN: 0897-4756

PB American Chemical Society

DT Journal

LA English

AB Platinum catalyzed hydrosilylation of allyl glycidyl ether with octahydridosilsesquioxane ($\text{HSiO}_{1.5}$)₈ and octakis(dimethylsiloxy)silsesquioxane ($\text{HMe}_2\text{SiOSiO}_{0.5}$)₈ provides access to tetra- and octaepoxy-functionalized cubic silsesquioxanes (cubes). The resulting epoxy cubes offer "masked" silica contents of up to 65 wt.%, are sol. in common solvents, and are viscous liqs. at room temp. and making them attractive for coating and nanocomposite applications. They polymerize on exposure to UV light in the presence of a catalytic photoinitiator to produce insol., hybrid nanocomposites. The epoxy cubes were characterized by NMR (¹H, ¹³C, ²⁹Si), TGA, FTIR, and SEC.

L2 ANSWER 12 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:350596 HCAPLUS

DN 125:60085

TI Modified hydrogen silsesquioxane resins as precursor for manufacture of ceramics

IN Zank, Gregg A.

PA Dow Corning Corp., USA

SO U.S., 5 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5516867	A	19960514	US 1995-439843	19950512
	CA 2175415	AA	19961113	CA 1996-2175415	19960430
	EP 742245	A2	19961113	EP 1996-303144	19960503
	EP 742245	A3	19970827		
	R: DE, FR, GB				
	JP 08302019	A2	19961119	JP 1996-116792	19960510
PRAI	US 1995-439843		19950512		

AB Novel modified hydrogen silsesquioxane resins, of structure ($\text{HSiO}_{1.5}$)_x($\text{R}_1\text{R}_2\text{R}_3\text{SiO}_{0.5}$)_y (R_1 , R_2 , and R_3 are independently selected from H, alkyl, and aryl; $x = 0.25-0.99$; $0.01 < y < 0.75$; and $x + y = 1.0$) were disclosed. The resins are prepd. by refluxing a mixt. of 1 wt. part of the precursor resin, of structure $\text{HSi}(\text{OH})_x(\text{X})_y\text{O}_z/2$ (X is a hydrolyzable substituent, $x = 0-2$; $0 < y < 2$; $z = 1-3$; $x + y + z = 3$), with 0.01-0.5 wt. parts water, 0.0001-0.05 wt. parts of an acid (esp. trifluoroacetic acid), and 0.1-10 wt. parts of an end-capping agent of structure ($\text{R}_1\text{R}_2\text{R}_3\text{Si}$)₂O ($\text{R}_1, \text{R}_2, \text{R}_3$ are H, alkyl, alkenyl, or aryl). Suitable X is Cl or alkoxy; suitable R_1 , R_2 , and R_3 are H or Me; preferably, the end-capping reagent are hexamethyldisiloxane and 1,1,3,3-tetramethyldisiloxane. The modified resins, which are typically prepd. by

refluxing the components at 20-150.degree. for 1-24 h in an org. solvent, have a no.-av. mol. wt. of 500-2500, and are suitable for manuf. of ceramics.

L2 ANSWER 13 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:236207 HCAPLUS

DN 124:329335

TI Highly porous interlayer dielectric for interconnect capacitance reduction

AU Jeng, Shin-Puu; Taylor, Kelly; Seha, Tom; Chang, Mi-Chang; Fattaruso, John; Hayemann, Robert H.

CS Semiconductor Process and Device Center, Texas Instruments, Inc., Dallas, TX, 75265, USA

SO Symp. VLSI Technol., Dig. Tech. Pap., 15th (1995), 61-2 Publisher:

Business Center for Academic Societies Japan, Tokyo, Japan.

CODEN: 62PWAR

DT Conference

LA English

AB Hydrogen silsesquioxanes ((HSiO_{1.5})_{2n}, n = 3-8)

provide a low-d. gap fill between metals which reduces interconnect capacitance. They simplify the process integration of low dielec. materials using std. spin-on coating processes. It also greatly reduces the capacitative coupling between metal leads.

L2 ANSWER 14 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:113814 HCAPLUS

DN 124:177575

TI Silsesquioxanes as Synthetic Platforms. Thermally Curable and Photocurable Inorganic/Organic Hybrids

AU Sellinger, Alan; Laine, Richard M.

CS Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, 48109-2136, USA

SO Macromolecules (1996), 29(6), 2327-30

CODEN: MAMOBX; ISSN: 0024-9297

DT Journal

LA English

AB Novel inorg./org. hybrids based on silsesquioxanes, (RSiO_{1.5})₈ and propargyl methacrylate have been synthesized and characterized. The Pt catalyzed reaction of (HSiO_{1.5})₈ and (H(CH₃)₂SiOSiO_{1.5})₈ with HC.tplbond.CCH₂OCOC(CH₃)=CH₂ occurs specifically at the propargyl site, retaining the methacrylate functionality for subsequent polymn. These single-phase hybrids are sol. in common solvents e.g.: THF, toluene, hexane and CH₂Cl₂. Polymn. of the methacrylate hybrids can be realized thermally and photochem. to give hard, abrasion resistant, insol. composites contg. up to 65 wt. % masked silica. The hybrids were characterized by TGA, DSC, SEC and NMR (¹H, ¹³C and ²⁹Si).

L2 ANSWER 15 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:6652 HCAPLUS

DN 124:88604

TI Silsesquioxanes as synthetic platforms: thermally and photo curable inorganic/organic hybrids

AU Sellinger, Alan; Zhang, Chunxin; Laine, Richard M.

CS Departments of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, 48109-2136, USA

SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1995), Volume Date 1995, 36(2), 282-3

CODEN: ACPPAY; ISSN: 0032-3934

DT Journal

LA English

AB Novel functionalized polyhedral silsesquioxane cubes contg. both methacrylate and epoxy groups were prepd. and characterized. The syntheses are based on the Pt-catalyzed hydrosilylation of allyl glycidyl ether, propargyl methacrylate, and propargyl acetate with (HSiO_{1.5})₈, and the epoxidn. of (CH₂:CHMe₂SiOSiO_{1.5})₈ with 3-chloroperoxybenzoic acid. The reactions are high yield (>85%) and form relatively pure products as detd. by H, C-13, and Si-29 NMR, TGA, and SEC. The products may be thermally, chem., or photochem. cured to give hard, abrasion, and solvent-resistant materials contg. ~70% masked silica.

L2 ANSWER 16 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1995:925666 HCAPLUS

TI Silsesquioxanes as synthetic platforms: Thermally and photo curable inorganic/organic hybrids

AU Sellinger, Alan; Zhang, Chunxin; Laine, Richard M.

CS Macromolecular Science and Engineering Center, University Michigan, Ann Arbor, MI, 48109-2136, USA

SO Book of Abstracts, 210th ACS National Meeting, Chicago, IL, August 20-24 (1995), Issue Pt. 2, POLY-114 Publisher: American Chemical Society, Washington, D. C.

CODEN: 61XGAC

DT Conference; Meeting Abstract

LA English

AB Novel functionalized silsesquioxanes contg. both methacrylate and epoxy groups have been synthesized and characterized. The syntheses are based on the Pt catalyzed hydrosilylation of allylglycidylether, propargylmethacrylate, and propargylacetate with (HSiO_{1.5})₈ and (HSiMe₂OSiO_{1.5})₈, and the epoxidn. of (CH₂=CHSiMe₂OSiO_{1.5})₈. The reactions are high yield (>85%), and form relatively pure products as detd. by ¹H, ¹³C, ²⁹Si NMR, TGA and SEC. The products may be thermally, chem., or photochem. cured to give hard, abrasion, and solvent resistant materials contg. up to 70% masked silica.

L2 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1995:695730 HCAPLUS

DN 123:286789

TI Coupling of allyloxy and propargyloxy moieties with hydridosilanes: novel liquid crystalline functionalized silsesquioxanes

AU Sellinger, Alan; Laine, Richard M.

CS Department Materials Science Engineering, University Michigan, Ann Arbor, MI, 48109-2136, USA

SO Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.) (1994), 35(2), 665-6

CODEN: ACPPAY; ISSN: 0032-3934

DT Journal

LA English

AB The synthesis and characterization of novel liq. cryst. and methacrylate-functionalized silsesquioxanes (HSiO_{1.5})₈ prepd. by Pt-catalyzed coupling of 4 equiv. of 4-(4-allyloxybenzoyloxy)biphenyl or propargyl methacrylate with 1 equiv. octahydridosilsesquioxane. The low polymn. temp. for the methacrylate-functionalized silsesquioxane shows very promising utility for use in dental materials and abrasion-resistant coatings.

L2 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1995:313765 HCAPLUS

DN 122:87281

TI X-ray diffraction study on medium-range structure and thermal change of silica gel made from triethoxysilane by sol-gel method

AU Kamiya, Kanichi; Wada, Masanori; Izumi, Masao; Matsuoka, Jun; Nasu,

Hiroyuki
CS Faculty Engineering, Mie Univ., Mie-ken, 514, Japan
SO Bull. Inst. Chem. Res., Kyoto Univ. (1994), 72(2), 105-23
CODEN: BICRAS; ISSN: 0023-6071
DT Journal
LA English
AB Silica gel was prepd. from triethoxysilane, $\text{HSi}(\text{OC}_2\text{H}_5)_3$ (HTES), by the sol-gel method. The medium-range (MR) structure was examd. on the basis of the X-ray radial distribution anal. A structure model deduced from hydrosilsesquioxane ladder polymer, $(\text{HSiO}_{1.5})_n$, which is composed of 4-fold siloxane rings (or tetra-cyclosiloxane), well-simulated MR structure of the HTES-derived silica gel. Thermal structure change of the gel in air was traced by the IR spectrometry and X-ray diffraction anal. Above 300.degree.C, .tplbond.Si-H was oxidized to form .tplbond.Si-OH, followed by the condensation between .tplbond.Si-OH to form .tplbond.Si-O-Si.tplbond. bonds. At 300-500.degree.C, the change of MR structure such as probably the reconstructive change of 4-fold siloxane rings to 6-fold ones, which was not so abrupt as the tetraethoxysilane (TEOS)-derived silica gel, was obsd. The MR structure very similar to silica glass was not yet attained even at 1000.degree.C, while it was attained around 600.degree.C in the case of the TEOS-derived silica gel.

L2 ANSWER 19 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:639001 HCAPLUS
DN 121:239001
TI A Quantum Mechanical Investigation of Silsesquioxane Cages
AU Earley, Clarke W.
CS Department of Chemistry, University of Missouri, Kansas City, MO, 64110, USA
SO J. Phys. Chem. (1994), 98(35), 8693-8
CODEN: JPCHAX; ISSN: 0022-3654
DT Journal
LA English
AB Electronic structure calcns. were performed on a series of mol. silsesquioxane cages $[\text{HSiO}_{1.5}]_n$ ($n = 4, 6, 8, 10$, and 12) using ab initio quantum mech. methods to examine factors that det. the relatively stability of different sizes of silicon oxide cages. While previous ab initio studies were reported on the relative stability of mol. silicate rings, silsesquioxane cages are expected to be better models for solid-state silicates due to their rigidity and more similar mol. environment. To det. the relative stability of silicate cages, calcd. total energies at optimized geometries (6-31G(d)//6-31G(d)) for a series of silsesquioxane cages were compared. Consistent with both exptl. observations and prior theor. investigations, mols. contg. (Si-O-)3 rings were calcd. to be significantly less stable than mols. contg. only larger rings. Much smaller differences in relative stability were calcd. to occur between larger cages that do not contain this type of ring.

L2 ANSWER 20 OF 38 HCAPLUS COPYRIGHT 2002 ACS
AN 1992:638627 HCAPLUS
DN 117:238627
TI Characterization of silicon sesquioxide and thermal behavior of hydrosilsesquioxane gels
AU Belot, Valerie; Corriu, Robert; Leclercq, Dominique; Lefevre, Patricia; Mutin, P. Hubert; Vioux, Andre; Flanck, Anne Marie
CS Rhone-Poulenc, Montpellier, 34059, Fr.
SO Chem. Process. Adv. Mater. (1992), 143-58. Editor(s): Hench, Larry L.; West, Jon K. Publisher: Wiley, New York, N. Y.

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Serial No.:09/328,646

CODEN: 58HBAN

DT Conference

LA English

AB The thermal evolution of **HSiO1.5** gels under Ar was studied by TGA/mass spectrometry, x-ray absorption near edge structure, NMR, ESR, and comparison of heat-treated **HSiO1.5** with an authentic Si2O3 sample obtained by hydrolysis of Si2Cl6.

L2 ANSWER 21 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1992:451145 HCAPLUS

DN 117:51145

TI Size composition for paper

IN Makievskaya, S. I.; Gorskii, G. M.; Gushchina, N. V.; Shkol'nik, O. V.; Zverev, V. V.

PA Belorussian Technological Institute, USSR; State Scientific-Research Institute of Chemistry and Technology of Heteroorganic Compounds

SO U.S.S.R.

From: Otkrytiya, Izobret. 1991, (29), 127.

CODEN: URXXAF

DT Patent

LA Russian

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	SU 1668516	A1	19910807	SU 1989-4705605	19890615
AB	A size compn., conferring increased stability on paper after treatment and drying, comprises the siloxanes [HSiO1.5 (HMeSiO)10(Me2SiO)10(Me3SiO0.5)2]2 0.5-2.5 wt.% and H2O 97.5-99.5 wt.%.				

L2 ANSWER 22 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1991:74182 HCAPLUS

DN 114:74182

TI Thermal reactivity of hydrogenosilsesquioxane gels

AU Belot, V.; Corriu, R.; Leclercq, D.; Mutin, P. H.; Vioux, A.

CS Univ. Montpellier II, Montpellier, F34095, Fr.

SO Chem. Mater. (1991), 3(1), 127-31

CODEN: CMATEX; ISSN: 0897-4756

DT Journal

LA English

AB The thermal reactivity under Ar, air, and NH3 of the hydrogenosilsesquioxane gels (**HSiO1.5**), prepd. from trichloro- or trialkoxysilane, was investigated by using a thermogravimetric analyzer interfaced with a mass spectrometer. Under Ar these gels thermally decomp. by 2 different mechanisms: (1) the cleavage of Si-H bonds gives rise to a loss of H; (2) a redistribution reaction of Si-H and Si-O bonds induces the escape of SiH4. This second reaction, possibly catalyzed by residual hydroxyl groups, involves the formation of SiH2 groups as evidenced by IR and solid-state NMR spectroscopies. It accounts for the thermograms obtained under air and NH3.

L2 ANSWER 23 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1990:576936 HCAPLUS

DN 113:176936

TI Redistribution reactions in silsesquioxane gels

AU Belot, V.; Corriu, R. J. P.; Leclercq, D.; Mutin, P. H.; Vioux, A.

CS Univ. Sci. Tech. Languedoc, Montpellier, 34060, Fr.

SO J. Mater. Sci. Lett. (1990), 9(9), 1052-4

CODEN: JMSLD5; ISSN: 0261-8028

DT Journal

LA English
AB Thermal redistribution of Si-H and Si-O bonds or Si-C and Si-O bonds in the solid state in **HSiO_{1.5}** and MeSiO_{1.5} gels were examd. The gels were prepd. by hydrolysis of the corresponding chlorosilanes in di-Et ether with an excess of water, then washed and dried upon vacuum at 150.degree. for 24 h. The thermal behavior of the gels was followed by TG (Netzsch STA409) and a quadrupole mass spectrometer (Kenos KSM200) which enables qual. continuous anal. of the evolved gases. Gels were heated at 5 or 10.degree./min under flowing Ar (50 mL/min). NMR spectra were recorded with a Bruker AM30 FTNMR spectrometer at 59.6 MHz resonance frequency for Si-29. Magic-angle spinning was used (.apprx.4.1 kHz spinning frequency) combined with a cross-polarization pulse sequence (5 ms contact time under Hartmann-Hahn conditions and 60 s repetition time).

L2 ANSWER 24 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1989:214551 HCAPLUS

DN 110:214551

TI Injection-molded silicone rubber compositions with low compression set

IN Okami, Takehide; Fujiki, Hironao; Hasebe, Nobuyuki

PA Shin-Etsu Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 63202659	A2	19880822	JP 1987-34907	19870218
	JP 05000417	B4	19930105		
AB	The compns., useful for moldings with low compression set without post curing, comprise 100 parts vinyl group-contg. siloxanes (A), 0-300 parts fillers, catalytic amts. of Pt compds., and HR ₂ SiO _{0.5} -terminated hydrogen siloxanes (R = Me, Et, Pr) having 0.6-3.0 Si-bonded H (based on vinyl groups of A) and no HSiO_{1.5} units. A compn. of dimethylvinylsilyl-terminated polydimethylvinylsiloxane 100, methylsiloxane-treated silica 30, and cyclic methylhydrogen polysiloxane 1.36 parts and 5 ppm H ₂ PtCl ₆ was kneaded and injection-molded at 170.degree. for 60 s to give a product showing compression set 9.2%.				

L2 ANSWER 25 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1988:168547 HCAPLUS

DN 108:168547

TI Process for manufacture of siloxane resins having 0.1-30% monovalent units having Si-H groups

IN Butler, Derek William

PA Dow Corning Ltd., UK

SO Eur. Pat. Appl., 11 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 251435	A1	19880107	EP 1987-303458	19870421
	EP 251435	B1	19900912		
	R: BE, DE, FR, GB				
	US 4774310	A	19880927	US 1987-61759	19870615
	CA 1285095	A1	19910618	CA 1987-540535	19870625

JP 63008421 A2 19880114 JP 1987-157973 19870626
JP 05062129 B4 19930907
PRAI GB 1986-15862 19860628

AB A method for making siloxane resins essentially consisting of tetravalent SiO₂ units and monovalent R₃SiO_{0.5} and HaR₃-aSiO_{0.5} (R = C_{<9} alkyl, C_{<9} aryl; a = 1,2) units comprises reacting a siloxane resin consisting of R₃SiO_{0.5} units and SiO₂ units with (HaR₃-aSi)₂O in the presence of an acidic catalyst. Although these resins have SiH groups they differ from MQ resins [siloxane resins consisting of triorganosiloxane units (R₃SiO_{0.5}) and SiO₂ units] in that they have a significant content of divalent (HRSiO) and/or trivalent (HSiO_{1.5}) units. A MQ resin (I) was prep'd. by reacting 1-hexamethyldisiloxane 129.6, HCl 40, abs. EtOH 30, and H₂O 60 g at 70-80.degree., and adding 208.3 g Si(OEt)₄ dropwise over 60 min. The temp. was increased and maintained at 75-80.degree. for .apprx.30 min, and the product was sepd. using H₂O and PhMe. The org. phase was neutralized, dried, filtered, and the solvent removed under vacuum at 130.degree. producing 172.5 g I with mol. wt. 881, viscosity 554 mm²/s, and 1.9% residual SiOEt. A N-filled reactor was charged with 125.8 g I, 17.4 g (Me₂HSi)₂O was added, the mixt. was heated with stirring to 33.degree. and 0.72 g F₃CSO₃H was added with 0.07 g H₂O. The mixt. was heated to .apprx.80.degree. for 6 h, cooled to 62.degree., the acid catalyst pptd. by addn. of DMF, the mixt. maintained at 80.degree. for 1 h, cooled to room temp., and 10 g NaHCO₃ was added. The product was filtered, and stripped at 128.degree./10 mmHg, producing 77.9 g of resin, anal. of which showed 6.18% SiH.

L2 ANSWER 26 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1987:515635 HCAPLUS

DN 107:115635

TI A new route to trimethylsilylated spherosilicates. Synthesis and structure of [Si₁₂O₁₈](OSiMe₃)₁₂, D_{3h}-[Si₁₄O₂₁](OSiMe₃)₁₄, and C_{2v}-[Si₁₄O₂₁](OSiMe₃)₁₄

AU Agaskar, P. A.; Day, V. W.; Klemperer, W. G.

CS Dep. Chem., Univ. Illinois, Urbana, IL, 61801, USA

SO J. Am. Chem. Soc. (1987), 109(18), 5554-6

CODEN: JACSAT; ISSN: 0002-7863

DT Journal

LA English

OS CASREACT 107:115635

AB Three hydridosiloxanes were isolated for the first time from a mixt. of species (HSiO_{1.5})_n prep'd. by a method previously described by Frye and Collins: [Si₁₂O₁₈]H₁₂ (I), D_{3h}-[Si₁₄O₂₁]H₁₄ (II), and C_{2v}-[Si₁₄O₂₁]H₁₄ (III). The corresponding trimethylsiloxy compds. [Si₁₂O₁₈](OSiMe₃)₁₂ (IV), D_{3h}-[Si₁₄O₂₁](OSiMe₃)₁₄ (V), and C_{2v}-[Si₁₄O₂₁](OSiMe₃)₁₄ (VI) were prep'd. by treatment of I-III with Me₃NOSiMe₃Cl. The structures of II and III were detd. using single crystal x-ray diffraction and NMR techniques. Compds. I and IV have D_{2d} polyhedral frameworks involving four four-Si siloxane rings and four five-Si siloxane rings, i.e., [44, 54] cages. Compds. II and V have polyhedral D_{3h}-[43, 56] frameworks, while III and VI have C_{2v}-[44, 54, 61] frameworks.

L2 ANSWER 27 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1978:121372 HCAPLUS

DN 88:121372

TI Diorganomonochlorosilanes

IN Takamisawa, Minoru; Hayashi, Takayoshi; Umemura, Mitsuo

PA Shin-Etsu Chemical Industry Co., Ltd., Japan

SO Japan., 4 pp.

08/06/2002

Serial No.:09/328,646

CODEN: JAXXAD

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 52031854	B4	19770817	JP 1970-80642	19700914
AB	Diorganodichlorosilanes were treated with polysiloxanes having .gtoreq.30 mol% MeHSiO or HSiO1.5 unit in a mol in the presence of BCl ₃ , (Me ₂ N) ₃ PO, or Bu ₄ NCl to give diorganomonosilanes. Thus, 387 g Me ₂ SiCl ₂ , 200 g Me ₃ SiO(SiHMeO) ₁₀ SiMe ₃ , and 18 g (Me ₂ N) ₃ PO were refluxed 4 h to give 68.3% Me ₂ SiHCl.				

L2 ANSWER 28 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1973:125375 HCAPLUS

DN 78:125375

TI Organopolysiloxanes

IN Flannigan, William Tait

PA Imperial Chemical Industries Ltd.

SO Ger. Offen., 13 pp.

CODEN: GWXXBX

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2236971	A1	19730215	DE 1972-2236971	19720727
GB	1384695	A	19750219	GB 1971-35971	19720614
BE	786656	A1	19730124	BE 1972-120196	19720724
NL	7210431	A	19730201	NL 1972-10431	19720728
FR	2148078	A1	19730316	FR 1972-27323	19720728
JP	48028600	A2	19730416	JP 1972-76851	19720731
PRAI	GB 1971-35971		19710730		

AB Organopolysiloxanes, useful in paper manuf., were prepd. They contained R₃SiO_{0.5} and SiO₂ units, where R is a univalent hydrocarbon group, and also R₃SiO and (or) **HSiO1.5**. The ratio of R, R₃SiO_{0.5}, and R₃SiO and (or) **HSiO1.5** to SiO₂ was 0.6-1.5:1, the ratio of R₃SiO_{0.5} to R₃SiO and (or) **HSiO1.5** was 1-50:1, and OH bound to Si was .leq.1 wt. %. Thus, a mixt. of 339 parts trimethylchlorosilane (I) [75-77-4] and 24.2 parts methylchlorosilane [75-54-7] in 250.8 parts xylene was added to a SiO₂ hydrosol (prepd. from Na silicate, water, and HCl in isopropyl alc.). A mixt. was refluxed for 2 hr at 80-5.deg., cooled to 60-70.deg., 500 parts xylene added, the phases allowed to sep., the xylene phase contg. the resin distilled to remove water, isopropyl alc., and some xylene, to give a 30% polymer soln. in xylene. I (172 parts) was added to 1000 parts of the 30% resin soln. and the mixt. was refluxed for 3 hr, cooled to 60-70.deg. distilled at 135-40.deg. to remove water and unwanted disiloxanes to give a 30% product soln. in xylene.

L2 ANSWER 29 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1972:37004 HCAPLUS

DN 76:37004

TI Concretes of increased stability containing additives of organosilicon polymers

AU Batrakov, V. G.

CS USSR

SO Beton Zhelezobeton (1971), (10), 19-22

CODEN: BTZBA2

08/06/2002

Serial No.:09/328,646

DT Journal

LA Russian

AB Lab. and outdoor tests were made on the life of concrete and reinforced concrete structures in cyclic freezing, wetting, and drying, capillary suction and evapn. of salt solns. Synthesized sea water with 34 g salts/l. was used. Organosilicon liq.-like polyhydroxiloxane and Na siliconates increase the life and the freeze resistance of normally hardened concretes independent of their compn. and type of binder. This is esp. true for cast concrete made of highly mobile mixes used for filling seams in reinforced concrete parts. The highest freeze and corrosion resistance is obtained with the siloxane GKZh-94. In water-satd. concrete samples with various surfactants at +20 to -60.degree. the least relative expansion is obsd. in concretes with nonorganized structure. The effect of the siliconate GKZh-10 (0.1%) and sulfite waste liquor (0.02%) is somewhat less. Various types of cement can be obtained by adding sesquisiloxanes during grinding: hydrophobic ones by adding 0.15-0.25% sesquisiloxanes $\text{RSiO}_{1.5}$ ($\text{R}=\text{Me}, \text{Et}, \text{Ph}$), hydrophobic-gas-evolving ones by adding 0.1% $\text{RSiO}_{1.5}\text{HSiO}_{1.5}$, and gas-evolving ones by adding 0.1% $\text{HSiO}_{1.5}$. Additives of the $\text{RSiO}_{1.5}\text{HSiO}_{1.5}$ type show the best freeze resistance. The life increase of concrete is due to the formation of a fine-porous structure with rupture of the Si-H bond.

L2 ANSWER 30 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1969:414148 HCAPLUS

DN 71:14148

TI Enhancing the repellency of fibrous materials with fluoroalkoxyalkylsilanes or siloxanes

IN Pittman, Allen G.; Wasley, William L.

PA United States Dept. of Agriculture

SO U.S., 11 pp.

CODEN: USXXAM

DT Patent

LA English

FAN. CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 3441431	A	19690429	US 1967-641108	19670525

AB Fluoroisopropyl allyl (or vinyl) ethers (I; X, X' = F or Cl; n = 0-1) are treated with silanes (contg. Si-H bonds) in the presence of a Pt-catalyst to yield fluoroalkoxyalkylsilanes (II; X, X' = F or Cl; R, Y = F, Cl, alkoxy group, or aryl group; m = 2-3; n = 1-2), which are useful water- and oil-repellents for cotton and wool fabrics. Thus, 15.3 g. KF dispersed in 90 ml. diglyme was cooled to -40.degree., 44 g. hexafluoroacetone was added, the mixt. was allowed to warm to room temp., 32 g. allyl bromide was added, and the mixt. was heated 10 hrs. at 80-90.degree. to yield 68% hep-tafluoroisopropyl allyl ether (III) (I; X, X' = F; n = 1), b. 61.degree.. I (X, X', n, b.p. given) similarly prepd. were: Cl, Cl, 1, 130.degree.; F, Cl, 1, 97.degree.; F, F, 0, 29.degree.; Cl, Cl, 0, 81.degree., n_D^{23} 1.3579; and F, Cl, 0, 53-5.degree.. A mixt. of 0.06 mole III, 0.06 mole SiHCl_3 , and 0.2 ml. 0.14M $\text{H}_2\text{PtCl}_6 \cdot 6\text{H}_2\text{O}$ in iso-PrOH was heated in a sealed container for 6 hrs. at 90.degree. to yield 85% 3-(heptafluoroisopropoxy)propyl-trichlorosilane (IV) (II; X, X' = F; m = 3; n = 1; Y + R = Cl_3), b0.5 39.degree.. Other II similarly prepd. are tabulated. Wool and cotton fabrics, which were immersed for 10 min. in 1:1 IV-toluene soln. at 80.degree., removed, rinsed with acetone, dried, and cured for 10 min. at 150.degree., had oil repellency rating (3M test) 80 and 90, resp., and both had water repellency rating (AATC spray test) 100. Similar, but untreated, fabrics had no repellency by these

tests. IV (20 ml.) was hydrolytically polymd. by mixing with 600 ml. H₂O with vigorous stirring for 20 min. The polymer in 50 ml. C₂Cl₃F₃ was H₂O-washed, dried, and heated for 15 hrs. at 140-50.degree. to yield a polysiloxane (VIII) that had the repeating structure [(CF₃)₂CF₂(CH₂)₃SiO]_{1.5}. V, VI, and VII were similarly homopolymd. IV-SiHCl₃ copolymers (IX), with repeating structure [(CF₃)₂CF₂(CH₂)₃SiO]_{1.52.4}[HSiO]_{1.5}, were also prepd. by hydrolytic copolymer. Both VIII and IX gave good oil and water resistance to cotton and wool fabrics. V was similarly copolymd. with MeCl₂SiH.

L2 ANSWER 31 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1966:98945 HCAPLUS

DN 64:98945

OREF 64:18605e-f

TI Investigation of the chemical properties of stain films on silicon by means of infrared spectroscopy

AU Beckmann, K. H.

CS Philips Zentrallaboratorium G.m.b.H., Hamburg, Germany

SO Surface Sci. (1965), 3(4), 314-332

DT Journal

LA English

AB From the study of adsorption peaks and intensity of adsorption for ir transmission spectra on stain films electrochem. produced on p-type Si in concd. HF it is concluded that these films consist chiefly of Si hydrides. The overall compn. of the film produced by immersion of Si samples in 0.1N HNO₃ in concd. HF varies between H₂SiO₃ and HSiO_{1.5}; such variation in compn. was independent of type and magnitude of the cond. of the samples.

L2 ANSWER 32 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1962:28898 HCAPLUS

DN 56:28898

OREF 56:5479a-b

TI Crystal structure of (HSiO_{1.5})₈

AU Larsson, Kare

SO Arkiv Kemi (1960), 16, 215-19

DT Journal

LA Unavailable

AB (HSiO_{1.5})₈ is hexagonal, a 9.131 +- 0.01 and c 15.37 +- 0.015 A., Z = 3, space group is R_hvin.3. The structure resembles that of (MeSiO_{1.5})₈ but the mol. packing is different. The effective intermol. attraction is larger in (MeSiO_{1.5})₈ than in (HSiO_{1.5})₈.

L2 ANSWER 33 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1961:37655 HCAPLUS

DN 55:37655

OREF 55:7272a-d

TI Silicones. L. Methylsiloxanes with Si-H bonds

AU Muller, Rich.; Kohne, R.; Sliwinski, S.

CS Inst. silikon- und Fluorkarbonchem., Radebeul-Dresden, Germany

SO J. prakt. Chem. (1960), 11, 336-40

DT Journal

LA Unavailable

AB CA 54, 4436i, 25734a. Me siloxanes with Si-H bonds were made by cohydrolysis, cocondensation, or an equilibration process (siloxane, starting materials, b.p., m.p., d₂₀, n_{20D} and viscosity v₂₀ given): Me₃SiOSiHMe₂, MeHSiCl₂ (I) + Me₃SiCl, 85.7.degree., -, 0.758, 1.3789,

0.53; (Me₂HSiO)₄Si, Me₂HSiCl (II) + SiCl₄, 189.degree., -, 0.885, 1.3869, 1.35; (Me₂HSiO_{0.5})₆(SiO₂)₂, II + SiCl₄, 261.degree., -, 0.9298, 1.3934, -; (Me₂HSiO)₃SiMe, II + MeSiCl₃, 164.degree., -155.degree., 0.8613, 1.3852, -; (Me₂HSiO_{0.5})(MeSiO_{1.5})₂, II + MeSiCl₃, 225.degree., -140.degree., 0.9011, 1.3908, 1.59; (Me₂HSiO)₃SiH, II + HSiCl₃, 155.degree., -, 0.8553, 1.3813, -; (Me₂HSiO_{0.5})₄(HSiO_{1.5})₂, II + HSiCl₃, 208.degree., -, -, 1.3867, -; (Me₂HSiO_{0.5})₂(MeHSiO), I + II, 119.degree., -, 0.825, 1.3798, 0.60; (Me₂HSiO_{0.5})₂(MeHSiO)₂, I + II, 157.degree., -, 0.867, 1.3831, 0.82; (Me₂HSiO_{0.5})₂(MeHSiO)₃, I + II, 188.degree., -, 0.884, 1.3859, 0.93; (MeH₂Si)₂O, MeH₂SiCl (III), 34.5.degree., -, 0.7487, 1.3590, -; (MeH₂SiO_{0.5})₂(MeHSiO), I + III, 90.degree., -, 0.8376, 1.3761, -; (MeH₂SiO)₄Si, III + SiCl₄, 159.5.degree., -, 0.901, 1.3833, -.

L2 ANSWER 34 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1959:70626 HCAPLUS

DN 53:70626

OREF 53:12785e

TI Structure of powdery dioxodisiloxane

AU Becherer, Gerhard; During, Ottmar

CS Martin Luther Univ., Halle-Wittenberg, Germany

SO Chem. Tech. (Berlin) (1958), 10, 660-1

DT Journal

LA Unavailable

AB The structure of the title compd., (HSiO_{1.5})_x, was detd. by Fourier analysis of the Debye-Scherrer diagram.

L2 ANSWER 35 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1959:49843 HCAPLUS

DN 53:49843

OREF 53:8902h-i,8903a

TI Image-transfer-receiving layers

IN Gray, Russell H.

PA E. I. du Pont de Nemours & Co.

SO Continuation-in-part of U.S. 2,694,637 (C.A. 49, 2919b)

DT Patent

LA Unavailable

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2878121		19590317	US	
AB	A receiving layer for use in an inversion-transfer process is prepd. by coating a support with a dispersion in a water-permeable colloid of finely divided inert solid particles which are coated with a compd. contg. at least one SiH group. A more dense image is formed than when uncoated particles, e.g. SiO ₂ , are used because the SiH groups cause reduction of the Ag-ion complexes to Ag. Thus, 4 g. SiO ₂ particles having an av. diam. of 0.015 .mu. were coated with trichlorosilane. This was hydrolyzed to form a coating of (HSiO _{1.5}) _n in which n is 1 or more and the coating constituted 15-20% of the total wt. The particles are dispersed in 1l. of a 5% aq. gelatin soln. and coated on paper.				

L2 ANSWER 36 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1958:108827 HCAPLUS

DN 52:108827

OREF 52:19238c-e

TI Polysiloxanes

IN Wagner, Geo. H.; Erickson, Charles E.

PA Union Carbide Corp.

DT Patent

LA Unavailable

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2844435		19580722	US	
AB	Anhyd. condensation of certain substituted silanes to form polysiloxanes is accomplished by heating a substituted silane of the type $H(RO)Si(Y)Cl$, where R is an alkyl group and Y is Cl or an alkoxy group, in the presence of $AlCl_3$ or BCl_3 . $EtCl$ (and possibly also Et_2O) is evolved and a condensed polysiloxane is formed. For example, 100 cc. $HSi(OEt)_2Cl$ was added to 0.1 g. $AlCl_3$ and the mixt. refluxed for 2 hrs. $EtCl$ and Et_2O were evolved, leaving a solid corresponding to a polymer of HSiO1.5 . It is believed that org. groups and H atoms remain bonded to the Si atoms during the reaction. Continuation-in-part of U.S. 2,731,485 (C.A. 50, 8247g).				

L2 ANSWER 37 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1956:59456 HCAPLUS

DN 50:59456

OREF 50:11152b-d

TI Mica form of the silicon oxide hydride [**HSiO1.5**]_x

AU Wiberg, Egon; Simmler, Walter

CS Univ. Munich, Germany

SO Z. anorg. u. allgem. Chem. (1956), 283, 401-13

DT Journal

LA Unavailable

AB cf. C.A. 50, 10588e. In C_6H_6 the reaction of $HSiCl_3$ with H_2O in a 1:1.5 ratio yields a white ppt. of **HSiO1.5**, whereas in Et_2O a clear soln. results. Colorless, transparent, mica-like crystals of **HSiO1.5** are formed by removing the Et_2O and HCl at -40.degree. in vacuo. In this form **HSiO1.5** is stable in air and relatively inert. It decomp. thermally by the stepwise loss of H and changes color from yellow to orange to golden brown. This change is a polymerization process involving the formation of Si-Si bonds which converts the layer structure of **HSiO1.5** to a 3-dimensional polymer Si_2O_3 . The hydrolysis is a stepwise process with HCl splitting out between partially hydrolyzed $HSiCl_3$ mols. to form rings, then chains, and finally sheets. The effect of replacing $HSiCl_3$ with $RSiCl_3$ is reviewed.

L2 ANSWER 38 OF 38 HCAPLUS COPYRIGHT 2002 ACS

AN 1952:2479 HCAPLUS

DN 46:2479

OREF 46:422b-f

TI Silicoorganic compounds. XII. The action of certain aliphatic alcohols on trialkoxysilanes

AU Reilly, Albert F.; Post, Howard W.

CS Univ. of Buffalo, Buffalo, NY

SO J. Org. Chem. (1951), 16, 383-6

DT Journal

LA Unavailable

AB cf. C.A. 45, 5644b. Refluxing 38 g. $(EtO)_3SiH$ (I) in 50 cc. anhyd. ether with 14 cc. $PrOH$ 10 hrs. and fractionally distg. the mixt. give 17% $(EtO)_2(PrO)SiH$, b750 140-5.degree., n_{D25} 1.3817, d_{425} 0.8811, mol. refraction (MR) 46.92. With 28 cc. $PrOH$, 16% $EtO(PrO)_2SiH$, b745 162-5.degree., n_{D25} 1.3878, d_{425} 0.8804, M R 51.34, is formed. I (1 mol.) and 1 mol. $BuOH$ give 14% $EtO(BuO)_2SiH$, b742 188-95.degree., n_{D25} 1.3980, d_{425} 0.8830, M R 60.09. I and $AmOH$ (1:1) give 23% $(EtO)_2(AmO)SiH$, b747 153-5.degree., n_{D25} 1.3858, d_{425} 0.8807, M R 55.19. $(PrO)_3SiH$ (II) and

08/06/2002

Serial No.:09/328,646

BuOH (1:1) give 23% $(\text{PrO})_2(\text{BuO})\text{SiH}$, b744 210-12.degree., nD25 1.3987, d425 0.8794, M R 60.86; with a 1:2 ratio, 30% $(\text{BuO})_2(\text{PrO})\text{SiH}$, b745 215-17.degree., nD25 1.4025, d425 0.8695, M R 65.60, is formed. II and AmOH (1:1) give $(\text{PrO})_2(\text{AmO})\text{SiH}$, b741 211-18.degree., nD25 1.4025, d425 0.8724, M R 65.32; with a 1:2 ratio, 20% $(\text{AmO})_2(\text{PrO})\text{SiH}$, b748 235-40.degree., nD25 1.4100, d425 0.8742, M R 74.40, is formed. $(\text{BuO})_3\text{SiH}$ (III) and AmOH (1:1) give 16% $\text{AmO}(\text{BuO})_2\text{SiH}$, b751 255-60.degree., nD25 1.4127, d425 0.8739, M R 74.34; with a 1:2 ratio, 13% $(\text{AmO})_2(\text{PrO})_2\text{Si}$, b7 146-9.degree., nD25 1.4169, d425 0.8922, M R 94.34, is formed. Refluxing 100 g. I in 100 cc. ether 24 hrs. with 5 cc. H_2O gives 23% $[(\text{EtO})_2\text{SiH}]_2\text{O}$, b25 94-7.degree., nD25 1.3864, d425 0.9412, M R 62.54. In the same way II gives 15% $[(\text{PrO})_2\text{SiH}]_2\text{O}$, b13 131-3.degree., nD25 1.4024, d425 0.9591, M R 78.55; III gives 20% $[(\text{BuO})_2\text{SiH}]_2\text{O}$, b6 146-50.degree., nD25 1.4104, d425 0.9151, M R 99.19, in addn. to some $(\text{BuO})_5\text{Si}_3\text{O}_2$, b7 155-60.degree., nD25 1.4110, d425 0.9276, M R 129.48, and some $(\text{BuO})_6\text{Si}_4\text{O}_3$, b10 175-9.degree., nD25 1.4131, d425 0.9562, M R 157.02. Similar treatment of $(\text{AmO})_3\text{SiH}$ gives a mixt. of polymeric substances assumed to exist in various stages of hydrolysis, probably as far as $(\text{HSiO}_{1.5})_x$.